



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/457,208	12/07/1999	MARUTHI BHASKAR	CISCP127	7417
22434	7590	08/11/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 778 BERKELEY, CA 94704-0778			SHAH, CHIRAG G	
			ART UNIT	PAPER NUMBER
			2664	

DATE MAILED: 08/11/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/457,208

Applicant(s)

BHASKAR, MARUTHI

Examiner

Chirag G Shah

Art Unit

2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23,27-38,42 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-26,39-41,43-45 and 47 is/are allowed.
- 6) ☒ Claim(s) 1-23,27-38,42 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 11-16, 21, 29-33, and 46 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (U.S. Patent No. 6,205,150) in view of Yin (U.S. Patent No. 5,926,458), and further in view of Ayres (U.S. Patent No. 6,597,699).

Referring to claims 1, 2, 11, 12, 21, 29 and 46, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that data packets at various data rates or bandwidth class of service are sent from any or all of CPE. The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. However, Ruszczyk fails to explicitly disclose of metering a load value for each service class and the particular destination

Art Unit: 2664

of at least one of the packets and periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service class. Yin discloses in the abstract and in figure 2, column 4, lines 18-64 where queues 46-52 (although four queues are shown in figure 2, note, a particular router or network communication device may contain any number of queues) receives plurality of data packet (streams) and communication link 56 provides queue status information (thus, each queue meters the respective load value for the queue, the load value corresponds to number of packets (streams) for the class) from queues to packet scheduler 28 (destination). The queue status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Communication line 56 is coupled to each queue 46-52 in outgoing buffer 24 such that the various queue status information is communicated from each queue 46-52 to packet scheduler 28. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include metering load value and transmitting the status to the destination as disclosed by Yin in order to enhance scheduling, thus allocating bandwidth with respect to multiple service queues more efficiently and reliably. Ruszczyk in view of Yin discloses in figure 2 and column 4, lines 18-64 that the queue status information transmitted on communication link 56 may include the size of the packet at the head of each queue and information indicating whether a particular queue is full or empty such that the various queue status information is communicated from each queue 46-52 to packet scheduler 28. However, Ruszczyk in view of Yin fails to explicitly disclose that the

Art Unit: 2664

load value indicates a number count of streams for each service class. Ayres discloses in figures 2, 3 and column 6 to column 7, lines 39 that the data fields in the data queue head structure 55 includes a "queue-count" field 58 having a value indicating the number of packets presently held in the respective data queue. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk in view of Yin to include "queue count" field as a part of the queue status information being transmitted as taught by Ayres such that "queue-count" field enables performing several tasks including monitoring and adjusting the flow rate and usage to ensure overall system stability of the router and the network even when heavy loads occur.

Referring to claims 3-6, 13-16, and 30-33, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that data packets at various data rates or bandwidth class of service are sent from any or all of CPE. The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. Ruszczyk fails to disclose of one or more tickets (or each ticket) indicate a total number of streams (or a single stream) for each class (or particular class) that is being transmitted to the destination (same). The queue

status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include transmitting the status to the destination as disclosed by Yin in order to allocate bandwidth with respect to multiple service class queues more efficiently and reliably.

3. Claims 7-10, 17-20, and 34-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk and Yin in view of Ayres as applied to claim 1-6, 11-16, 21, 29-33, and 46 and further in view Yin et al (U.S. Patent No. 6,442,138).

Referring to claims 7-10, 17-20, and 34-37, Ruszczyk and Yin in view of Ayres disclose of sending one or more tickets to a router reserving certain service features of the network and signal that a number of packets will follow this same path. Ruszczyk and Yin in view of Ayres also disclose that based on the information (via status message with respect to load sized of queues), the packet scheduler determines which queue will be services next. Ruszczyk and Yin in view of Ayres fails to disclose that the selected core router is configured to allow the selected core router to dynamically allocate resource based on the current load of each class. Yin et al teaches of a system that determines the allocated bandwidth for the specified class of service. Yin discloses in figure 1, column 3, lines 65 to column 2, lines 13 of providing dynamic allocation of bandwidth resources, adapting to changing network configurations and changing

Art Unit: 2664

network traffic. As the bandwidth allocation is modified or updated by the CAC, a corresponding signal is provided to queue scheduler to adjust the manner in which queue are serviced by queue selector. Thus, implying one or more tickets are only transmitted (after a elapsed, predetermined time) for a particular class when the load value has changed for such service class. In addition to what Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13, Yin et al further discloses in column 6 lines 1 to column 7 lines 61 that the node or router is configured to allow the node to dynamically allocate resources based on the current load of each class and the tickets facilitate assured forward routing service performed by the core router. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk and Yin in view of Ayres to include the teachings of Yin et al. in order to ensure maximum utilization of the available bandwidth.

4. Claims 22, 23, 27, 28, 38, and 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk and Yin and in view of Yin et al. (U.S. Patent No. 6,442,138) further in view of Ayres (U.S. Patent No. 6,597,699).

Referring to claims 22, 23, 27, 28, 38, and 42, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that data packets at various data rates or bandwidth class of service are sent from any or all of CPE.

Art Unit: 2664

The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. However, Ruszczyk fails to explicitly disclose of metering a load value for each service class and the particular destination of at least one of the packets and periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service class. Yin discloses in the abstract and in figure 2, column 4, lines 18-64 where queues 46-52 (although four queues are shown in figure 2, note, a particular router or network communication device may contain any number of queues) receives plurality of data packet (streams) and communication link 56 provides queue status information (thus, each queue meters the respective load value for the queue, the load value corresponds to number of packets (streams) for the class) from queues to packet scheduler 28 (destination). The queue status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Communication line 56 is coupled to each queue 46-52 in outgoing buffer 24 such that the various queue status information is communicated from each queue 46-52 to packet scheduler 28. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include metering load value and transmitting the status to the destination as disclosed by Yin in order to enhance scheduling, thus allocating bandwidth with respect to multiple service queues more

Art Unit: 2664

efficiently and reliably. Ruszczyk in view of Yin disclose of sending one or more tickets to a router reserving certain service features of the network and signal that a number of packets will follow this same path. Ruszczyk in view of Yin fails to disclose that the selected core router is configured to allow the selected core router to dynamically allocate resource based on the current load of each class. Yin et al. teaches of a system that determines the allocated bandwidth for the specified class of service. Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13 of providing dynamic allocation of bandwidth resources, adapting to changing network configurations and changing network traffic. As the bandwidth allocation is modified or updated by the CAC, a corresponding signal is provided to queue scheduler to adjust the manner in which queue are serviced by queue selector. Thus, implying one or more tickets are only transmitted (after a elapsed, predetermined time) for a particular class when the load value has changed for such service class. In addition to what Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13, Yin et al. further discloses in column 6 lines 1 to column 7 lines 61 that the node or router is configured to allow the node to dynamically allocate resources based on the current load of each class and the tickets facilitate assured forward routing service performed by the core router. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teaching of Ruszczyk in view of Yin to include the teachings of Yin et al. in order to ensure maximum utilization of the available bandwidth. However, Ruszczyk and Yin in view of Yin et al fails to explicitly disclose that the load value indicates a number count of streams for each service class. Ayres discloses in figures 2, 3 and column 6 to column 7, lines 39 that the data fields in the data queue head structure 55 includes a "queue-count" field 58 having a value indicating the number of packets presently held in the respective data queue. Therefore, it would

Art Unit: 2664

have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk and Yin in view of Yin et al .to include “queue count” field as a part of the queue status information being transmitted as taught by Ayres such that “queue-count” field enables performing several tasks including monitoring and adjusting the flow rate and usage to ensure overall system stability of the router and the network even when heavy loads occur.

Allowable Subject Matter

5. Claims 24-26, 39-41, 43-45 and 47 allowed.

Response to Amendment

6. Applicant's arguments with respect to claims 1-23, 27-38, 42 and 46 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703)305-9051, (for formal communications; please mark "EXPEDITED
PROCEDURE)

Or:

(703)305-5403 (for informal or draft communications, please label "PROPOSED"
or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal
Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Chirag G Shah whose telephone number is 703-305-5639. The
examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the
organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
June 30, 2004


Ajit Patel
Primary Examiner